# NOTES ON PREY TAKEN BY SOME NORTH AMERICAN SPIDERS

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During a visit to south-central Texas in September 1987 my attention was drawn by a number of spiders whose conspicuousness was markedly increased as a result of the large prey items they were holding. Some of these predator–prey pairs were photographed and other observations were made which are of potential interest in terms of both the types of prey taken and the manner in which these were handled.

The green lynx spider, *Peucetia viridans* (Hentz) (Oxyopidae) was observed on numerous occasions holding moderate to large, aculeate hymenopteran prey. In addition to honey bees, *Apis mellifera* L. (Fig. 1*a*), which comprised the vast majority of food items (15 out of 18 observations), two spiders, at different localities were observed with large tiphiid wasps, *Myzinum* sp. (Figs 1*b–d* and 2*a*). The honey bees and the female tiphiid were held in the spiders' chelicerae just behind the head (Figs 1*a–b* and 2*a*) though the male tiphiid was being held by its metasoma (Fig. 1*c*, *d*). One other lynx spider was observed with an adult nymphalid butterfly. All of the *Peucetia* prey displayed flaccid paralysis.

The daring jumping spider, *Phidippus audax* (Hentz) (Salticidae), was again observed feeding predominantly on honey bees (six instances) (Fig. 2*c*) but was also observed once eating a green lynx spider (Fig. 2*b*). Prey were held by the chelicerae and fore legs and although no preferred orientation was noted none were held immediately behind the head as in *Peucetia*.

Finally on one occasion, a crablike spiny orb spider, *Gasteracantha elipsoides* (L.) (=*G. cancriformis* (L.)) (Araneidae) was observed in its web feeding on another adult of the same species (Fig. 2*d*). How and why the second individual arrived in the same web is unknown.

The present observations agree fairly well with previous published reports of the feeding phenologies of *Peucetia* (Turner, 1979) and of *Phidippus* (Jackson, 1978). Turner's data show *Apis mellifera* and Hymenoptera in general to be important prey types, but in her sample, they only constituted about 40% of the total prey whereas they constituted more than 90% in the present set of observations. However, since my attention to the spiders was often drawn by their conspicuousness while holding their prey, I may have overlooked spiders with smaller or more cryptic prey. Jackson's work on the diet of *Phidippus johnsoni* (Peckham and Peckham) showed the major prey groups taken to be Diptera (30.3%) and other arachnids (33.3%) with Hymenoptera accounting for only 9% (two *Apis* and one ant). The present observations again suggest that when honey bees are abundant, as they were at the present study site), they can constitute a considerable proportion of the diet of *Phidippus* jumping spiders. Jackson observed *P. johnsoni* feeding on members of three spider families, notably Lycosidae and Salticidae but his data was assembled from observations made in several habitat types. In contrast, the present observations on *Peucetia* and *Phidippus* were all made on spiders among the branches and flower heads of woody herbs such as the composite *Baccharis*, in sunny situations. Here *Peucetia viridans* and *Phidippus audax* were by far the most numerous large spiders; lycosids were not observed. *P. audax* and other large salticids have been observed feeding on several web weaving spiders (*Argiope, Allepeira*) (Lamore, 1958; Robinson and Valerio, 1977; Horton, 1983), and as in the present observation of *P. audax*, the salticid attacks by jumping onto the back of its prey (Fig. 2*b*, *c*).

The observation that *P. viridans* envenomation causes flaccid paralysis is of

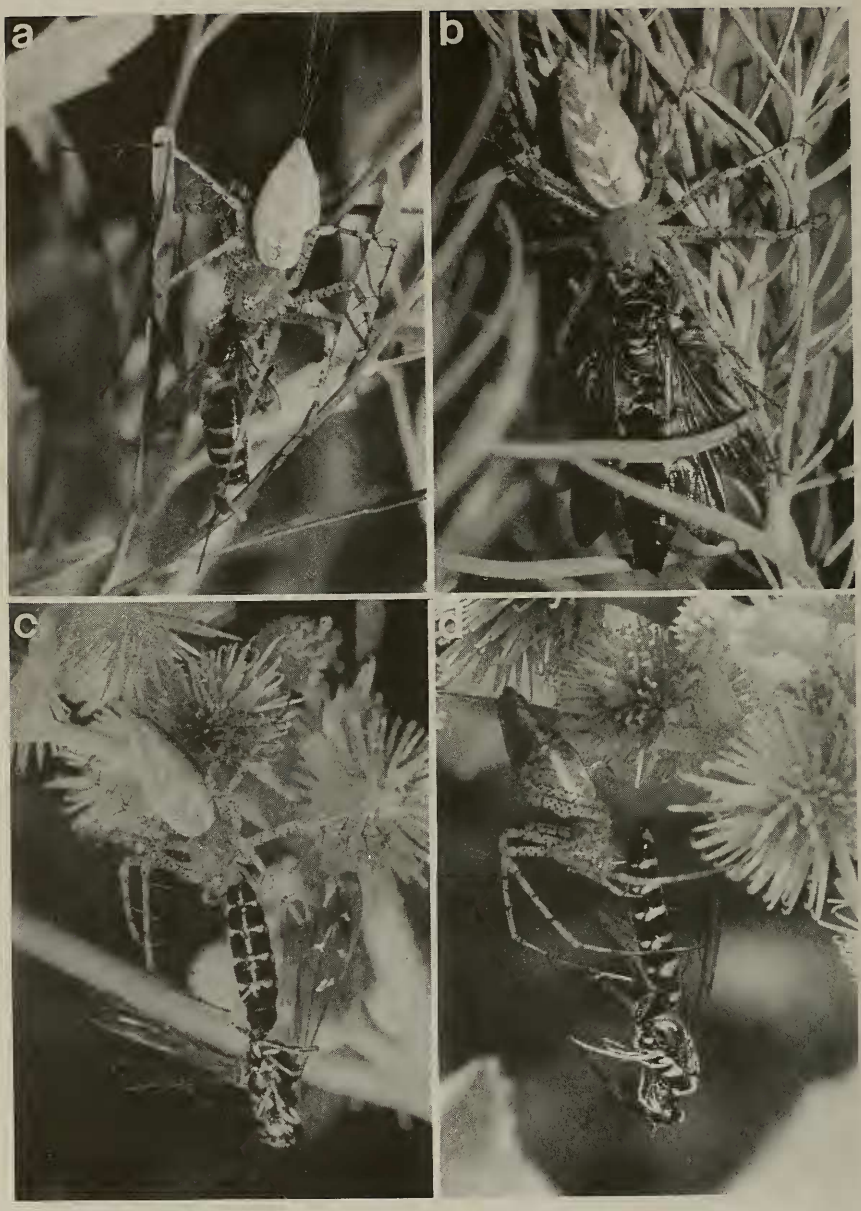


Fig. 1. *Peucetia viridans* with prey. *a*, With worker *Apis mellifera*; *b*, with female *Myzinus* sp.; *c*, with male *Myzinus* sp.


Fig. 2.*a, Peucetia viridans* with female *Myzinus* sp.; *b, Phidippus audax* with *Peucetia viridans*; *c, Phidipus audax* with worker *Apis mellifera*; *d, Gasteracantha elipsoides* cannibalizing another *G. elipsoides*.

potential interest to the growing number of toxicologists who have been investigating spider venoms. Different spider venoms contain different neurotoxins some of which block neuromuscular transmission (e.g. those of the Araneidae) whereas others cause massive release of neurotransmitter resulting at least initially in rigid paralysis (e.g. theridiid venoms). Since *Peucetia* appears to show a preference for biting its prey behind the head (as also do members of the crab spider family Thomisidae) it seems likely that its venom may act on the insect's central nervous system causing a blockade of nerve activity. It is hoped that in the future, more observations will be made on the effects of spider venoms on their arthropod prey, as such information will help to tie together the findings of the physiologists and toxinologists with the practical functions of the spiders' venom and ultimately, it may enable us to understand why different groups of spiders use widely different sorts of toxins.

## References

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## BOOK REVIEW

**British red data books: 2 insects.** Edited by D. B. Shirt. Nature Conservancy Council, 1987, 448 pages, £10.

This is a book about insects whose survival in Britain is considered to be threatened for one reason or another. It is the outcome of a major undertaking wherein the current status in Britain of members of the major insect orders has been scrutinised and those insects thought to be in danger listed. About 1800 species have been selected, which amounts to about 15% of the relevant insect orders. The book lists criteria used in assigning insects to the main 'at risk' categories — 'endangered', 'vulnerable', 'rare', and identifies those few species and subspecies (about 10) which are endemic to Britain. There follows lists of species in each category and, except for a number of Diptera, an account is provided for each species labelled 'endangered' (category 1) or 'vulnerable' (category 2) under the headings; identification, distribution, habitat and ecology, status, threats, author of account.

In view of the fragmentary knowledge of many insects occurring in Britain, there is bound to have been uncertainty in deciding which names to include in a list of threatened species and which to leave out. Some of the omissions, nevertheless, are surprising, at least among the Coleoptera. A number of beetle species have far fewer records than do many of the species which have been selected, for example: *Anaspis bohemica* Schilsky (recorded for certain only in 1951 and 1986, two 10-km squares),